Name: _____

Algebra 2 CC Review for Midterm

SHOW ALL WORK ON SEPARATE PAPER! Be sure to review your old notes and tests as well.

1) Simplify: $\frac{\sqrt{75}}{\sqrt{3}}$

A) $\frac{5\sqrt{3}}{3}$ B) 25 C) 5 D) $5\sqrt{3}$

2) Simplify: $2\sqrt{3}(3\sqrt{6} - 3\sqrt{3})$

A) $12\sqrt{3} - 18$ B) $18\sqrt{2} - 18$ C) $3\sqrt{6} - 6\sqrt{3}$ D) 18

3) The roots of the equation $x^2 + 6x + 11 = 0$ are

A) real, rational, and unequal
B) real, rational, and equal
C) real, irrational, and unequal
D) imaginary

4) What is the sum of $\frac{5}{3}x^2 - \frac{8}{5}x + \frac{7}{8}$ and $-\frac{3}{5}x^2 - \frac{1}{2}x + \frac{1}{4}$?

A) $\frac{2}{15}x^2 - \frac{9}{10}x + 1$
B) $\frac{8}{15}x^2 - \frac{9}{10}x + 2$
C) $\frac{16}{15}x^2 - \frac{21}{10}x + \frac{9}{8}$
D) $x^2 - \frac{9}{7}x + \frac{2}{3}$

5) What are the sum (S) and product (P) of the roots of the equation $3x^2 - 7x + 12 = 0$?

A) $S = \frac{7}{3}$, $P = -4$
B) $S = 7$, $P = 12$
C) $S = -\frac{7}{3}$, $P = -4$
D) $S = \frac{7}{3}$, $P = 4$

6) What is the product of $(2 + a)$ and $(3 - b)$?

A) $6 - 2b + 3a - ab$
B) $6 + ab - b^2$
C) $6 - ab$
D) $5 + ab + 3a - 2b$

7) If $(\sqrt{18} + \sqrt{2})$ is divided by $\sqrt{2}$, the result is

A) 16
B) 4
C) 3
D) $\sqrt{10}$

8) What is the magnitude of the complex number $z = 5 + 12i$?

A) 13
B) 17
C) 7
D) 169

9) Which of the following numbers is the discriminant of a quadratic equation whose roots are real, unequal, and irrational?

A) -5
B) 0
C) 7
D) 4

10) Which of the following correctly shows the factoring of $x^3 + 27$?

A) $(x + 3)(x^2 - 3x + 9)$
B) $(x + 3)(x^2 + 3x - 9)$
C) $(x + 3)(x + 3)(x + 3)$
D) $(x + 3)(x - 3)(x - 3)$

11) What is the quotient when $x^3 - 2x^2 - 9$ is divided by $x - 3$?

A) $x^2 - x - 6$
B) $x^2 - 5x + 6$
C) $x^2 + x - 6$
D) $x^2 + x + 3$

12) Which of the following equations is the solution to $x^2 + 14x + 3 = 0$ after completing the square?

A) $(x - 7)^2 = 52$
B) $(x + 7)^2 = 52$
C) $(x + 7)^2 = 46$
D) $(x - 7)^2 = 46$

13) Which equation has the roots $3 + i$ and $3 - i$?

A) $x^2 + 6x - 8 = 0$
B) $x^2 - 6x + 10 = 0$
C) $x^2 + 6x - 10 = 0$
D) $x^2 - 6x + 8 = 0$

14) The sum of $\sqrt{-18}$ and $\sqrt{-72}$ is

A) $36i$
B) $3\sqrt{10}$
C) $6i$
D) $9i\sqrt{2}$

15) The value of $2i^8$ is

A) -2
B) $-2i$
C) $2i$
D) 2

16) Which equation has *both* 3 and 6 as roots?

A) $\sqrt{x-2} = \frac{x}{3}$
B) $\sqrt{x-2} = \frac{3}{x}$
C) $\sqrt{x-2} = x - 4$
D) $\sqrt{x-2} = 4 - x$

17) Simplify: $(\frac{x^2 - 4}{10x})(\frac{5x^2}{x^2 + 2x})$

A) $\frac{x+2}{2x}$
B) $\frac{x-2}{2}$
C) $x - 1$
D) $\frac{x-2}{2x}$

18) For which value(s) of x is the function $f(x) = \frac{x^2 - 9}{x - 7}$ undefined?

A) 9
B) 3 and -3
C) 7
D) 3, only

19) Simplify: $(7 - x\sqrt{x})^2$

A) $49 - 14x\sqrt{x} + x^3$
B) $49 - x^3$
C) $9 - 7x\sqrt{x} + x^3$
D) $49 - 14x\sqrt{x} + x^2$

20) Simplify: $6\sqrt{54} - 3\sqrt{24} - 8\sqrt{96}$

A) $-8\sqrt{6}$
B) $-20\sqrt{6}$
C) $3\sqrt{30} - 8\sqrt{6}$
D) $10\sqrt{6}$

21) Solve: $\frac{3}{x} - 2 = \frac{-2x}{x+1}$

A) 3
B) -4
C) 6
D) -3

22) Simplify: $\sqrt{72}$

23) Combine and simplify: $6\sqrt{20} - 2\sqrt{80}$

24) Combine and simplify: $2\sqrt{18x^2} + 3x\sqrt{2}$

25) Simplify: $(6x^2 + 11x - 10) \div (2x + 5)$

26) Simplify: $\frac{12}{3\sqrt{8}}$

27) Solve for x: $\frac{1}{x} + 3 = \frac{7}{2}$

28) Write an expression to represent $ax - ay - bx + by$ when factored completely.

29) Write an expression to represent $4x^2 - 9$ when factored completely.

30) What is the value of y in the equation $\sqrt{y - 2} = 5$?

31) Solve the given equation by completing the square. [*Express the answer in simplest radical form if necessary.*]

$c^2 - 3c - 18 = 0$

32) What is the solution of the quadratic equation $2x^2 - x = 7$?

A) $\frac{1 \pm \sqrt{57}}{4}$ B) $\frac{1 \pm \sqrt{57}}{2}$ C) $\frac{-1 \pm \sqrt{57}}{2}$ D) $\frac{-1 \pm \sqrt{57}}{4}$

33) Solve the given expression using the quadratic formula. [*Express the answer in simplest radical form.*]

$2(x^2 - 1) = 3x$

34) Express in simplest form in terms of i: $\sqrt{-27}$

35) Find the discriminant: $2y^2 + 3y + 2 = 0$

36) Simplify: $\sqrt[3]{54}$

37) What is the quotient when $(t^4 - 3t^3 + t^2 + 6t - 2)$ is divided by $(t^2 + 2)$?

38) Simplify: $\frac{-5}{3 - a} \div \frac{10}{a - 3}$